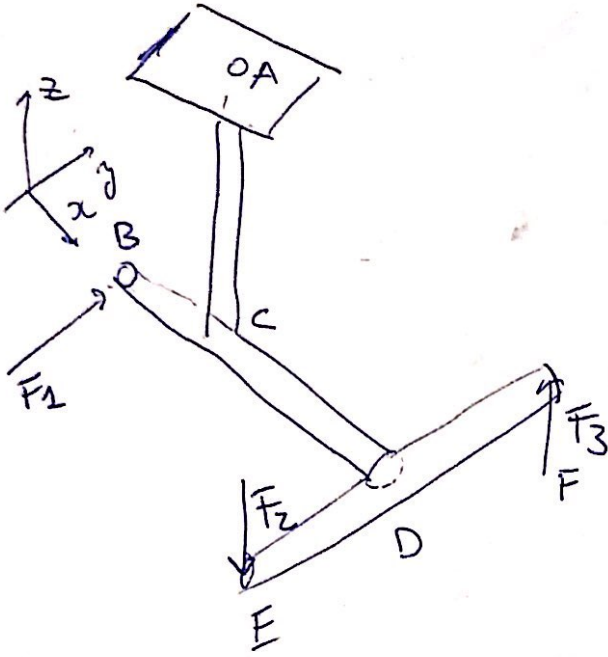
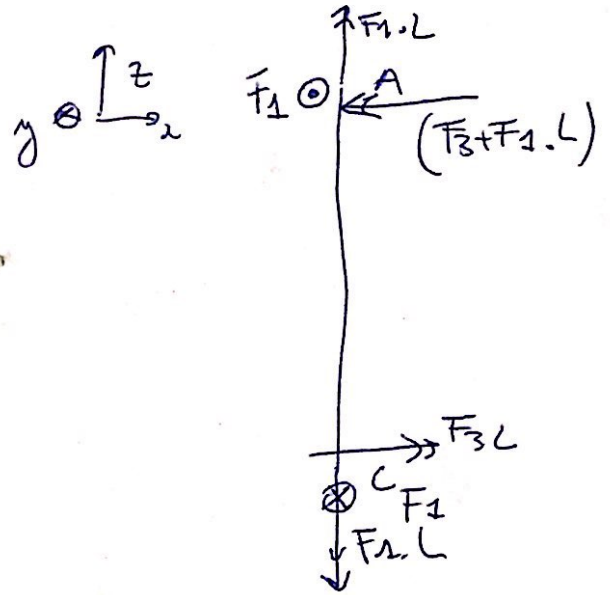


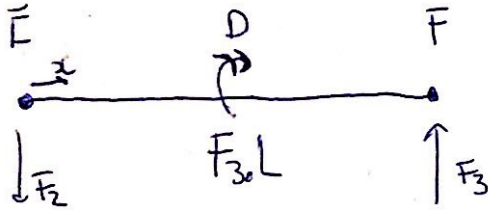
EJERCICIO 1



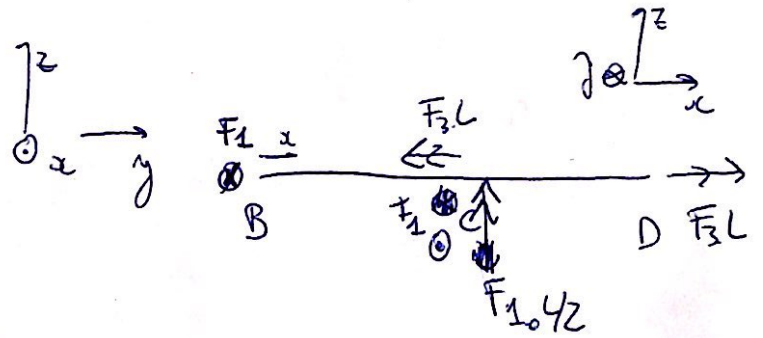
DCL AC



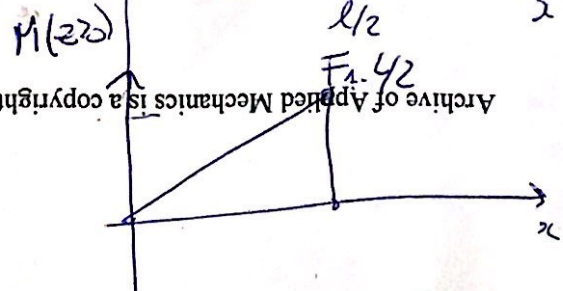
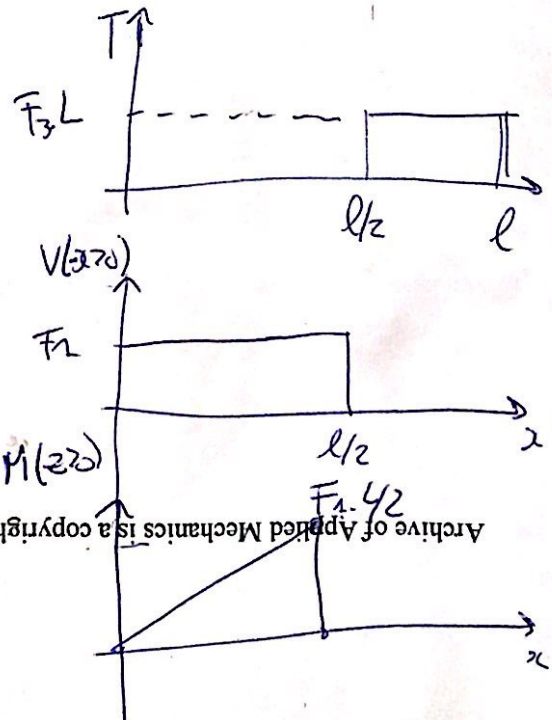
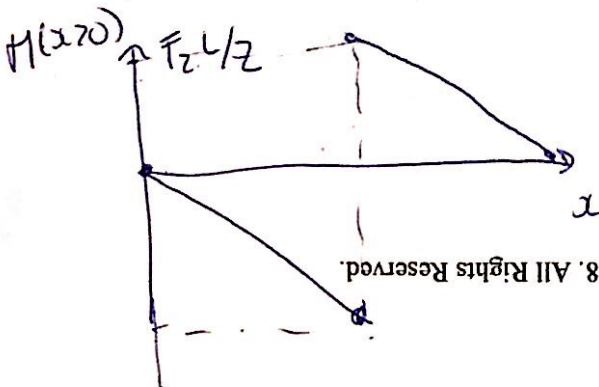
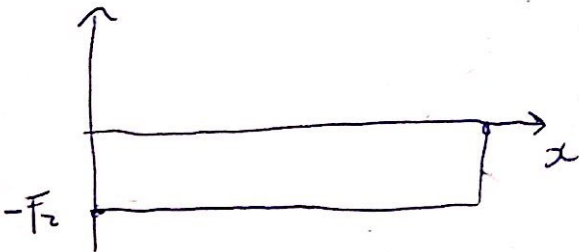
DCL EF:



DCL BCD:



V(z=0)



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En S.I

$$F \cdot 3 = V_B \cdot 1,75$$

$$H_B = H_A \quad V_A = V_B + F$$

$$\frac{V_C}{H_C} = \frac{5}{1,25} = 2,86$$

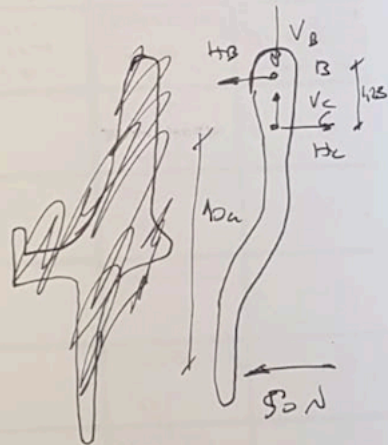
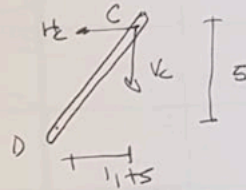
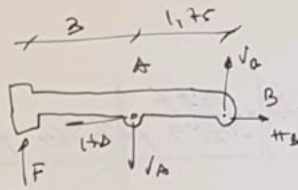
$$50 \text{ N} \times 10 = H_B \times 1,25 \rightarrow H_B = 400 \text{ N}$$

$$V_C = V_B$$

$$H_C = H_B + 50 \text{ N} = 450 \text{ N}$$

$$V_B = V_C = \frac{5}{1,25} H_C = 1286 \text{ N}$$

$$F = V_B \frac{1,75}{3} = \underline{\underline{750 \text{ N}}}$$



$$L_1 = 1 \text{ m} \quad \Delta T_1 = 25^\circ \text{C}$$

$$\phi_1 = 2 \text{ cm}$$

$$L_2 = 1.5 \text{ m} \quad \Delta T_2 = -10^\circ \text{C}$$

$$\phi_2 = 2 \text{ cm}$$

$$\alpha = 11.7 \times 10^{-6} \text{ } 1/^\circ \text{C}$$

$$E = 210 \text{ GPa}$$

$$\delta_D = \frac{F_B \cdot L_1}{EA_1} + \alpha \Delta T_1 L_1$$

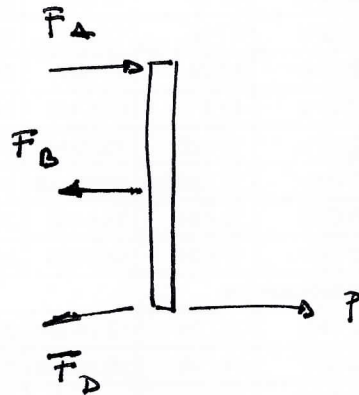
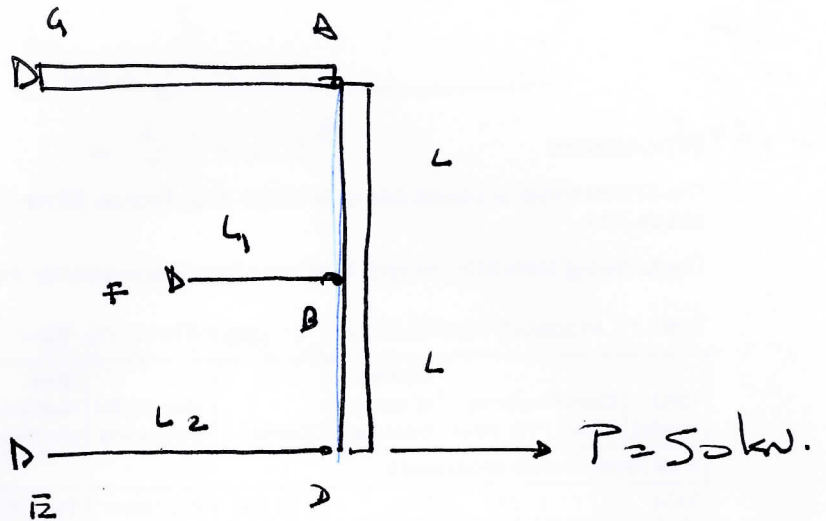
$$\delta_D = \frac{F_D \cdot L_2}{EA_2} + \alpha \Delta T_2 L_2$$

$$\delta_D = 2 \text{ cm}$$

$$\begin{cases} F_A = F_B / 2 \\ F_D = P + F_A - F_B = P - F_B / 2 \end{cases}$$

$$\frac{F_D \cdot L_2}{EA_2} + \alpha \Delta T_2 L_2 = \left(\frac{F_B L_1}{EA_1} + \alpha \Delta T_1 L_1 \right) 2$$

$$\left(P - F_B / 2 \right) \frac{L_2}{EA_2} - F_B \frac{2L_1}{EA_1} = \alpha \left(\Delta T_1 \cdot 2L_1 - \Delta T_2 L_2 \right)$$



$$F_B + F_D = P + F_A$$

$$F_A \cdot 2 = F_B$$

$$F_B \left(\frac{2L_1}{A_1} + \frac{L_2}{2A_2} \right) = -E\alpha \left(\Delta T_1 2L - \Delta T_2 L_2 \right) + \frac{PL_2}{A_2}$$

$\underbrace{\hspace{10em}}_{8754} \qquad \underbrace{\hspace{10em}}_{-1,35 \times 10^8} \qquad \underbrace{\hspace{10em}}_{2,38 \times 10^8}$

$$\rightarrow F_B = 11,8 \text{ kN} \quad F_A = 5,9 \text{ kN}$$

$$F_D = 44,1 \text{ kN}$$

$$\delta_B = 0,18 \text{ mm} + 0,23 \text{ mm} = 0,41 \text{ mm}$$

$$\delta_D = 1,0 \text{ mm} - 0,18 \text{ mm} = 0,82 \text{ mm}$$

2x ✓